

C I R C U L A R
PENNSYLVANIA DEPARTMENT OF AGRICULTURE
HARRISBURG, PA.

No. 4

April 1925

Preparation and Care
of Lawns

By

E. M. GRESS, *Ph. D.*
Bureau of Plant Industry

F. P. WILLITS, *Secretary of Agriculture*
C. H. HADLEY, *Director*, Bureau of Plant Industry

Published monthly by the direction of the Secretary. Application for entry as
second-class matter at the post office at Harrisburg pending

PENNSYLVANIA STATE LIBRARY
DOCUMENTS SECTION

SUMMARY

A good, fertile seed bed is the first and most important consideration in making a beautiful lawn.

Page 3

The selection of weed-free seed of the right varieties and best quality is likewise important.

Page 3

An attractive lawn can soon be ruined by weeds. Methods for prevention and eradication are given in this circular.

Page 4

Attention and perseverance are necessary to keep a lawn beautiful.

1. Renovate in the spring.

Page 5

2. Fertilize in the spring or fall.

Page 5

3. Mow regularly.

Page 6

4. Water properly in summer.

Page 6

PREPARATION AND CARE OF LAWNS

By E. M. Gress, Ph. D.

Two things must be kept in mind in the establishment of every grass plot. These are the careful preparation and proper fertilizing of the soil and the selection and planting of appropriate grasses of good quality.

Good Seed Bed Essential

A good seed bed should be prepared. The quality of the soil should be equal at least to that on which garden crops are grown. The top six to ten inches should be plowed or spaded and heavily fertilized with well rotted manure, which must be well mixed with the soil. Hydrated lime at the rate of 1,000 pounds per acre well mixed with the top two or three inches of soil will be of great benefit.

After the ground has been plowed or spaded it should be well harrowed and raked so as to make it fine. Grass seeds are very small and should not be sowed on rough, coarse soil. If the soil is loose it should be rolled so as to make it firm. After rolling, it should be raked again so as to loosen up the top to a depth of about two inches. It is now ready for the sowing of the seeds. After the seeds have been sowed it may again be very lightly raked so as to cover the seeds and again rolled to make it perfectly smooth and to insure capillary attraction. This last rolling, however, is often omitted.

Selection of Seeds

The selection of the kind and quality of grass seed is very important matter in securing a nice even turf. If one does not have confidence in his own ability to make the selection of the seeds to be used, he should go to a reputable dealer and buy the very best seeds that it is possible to get. These can not be bought at the rate of 10 cents for a 7-ounce package as can be done in some of the stores in nearly every town and city in the state. These cheap seeds are mostly chaff and weed seeds, and are very dear at any price.

If a good mixture is desired the different kinds of grass of best quality obtainable may be bought and thoroughly mixed before sowing. The following mixture is suitable for lawns in Pennsylvania:

Kentucky blue grass.....	4 parts (by weight)
Redtop	2 parts
Red fescue or Chewing's fescue ..	1 part
Creeping bent	1 part
Pacey's rye grass	1 part
White clover	1 part

Kentucky blue grass and redtop are the most important and are frequently used without the other grasses. The Pacey's rye and the white clover grow quickly and are useful for that reason. The Kentucky blue grass grows slowly but makes a splendid turf when once established. It, however, will not thrive on acid soil. The

redtop will grow well on acid soil, and, therefore, makes a good combination with the blue grass. The red fescue and the creeping bent grow well in the shade and are, therefore, useful in helping to form a good turf in the shaded areas which are found in every lawn. The seeds should be well mixed and sowed evenly at the rate of about one pound to 200 square feet of surface.

Attention After Seeding

If the moisture conditions are favorable, the lawn will need little or no attention until the grass is high enough to be cut with the lawn mower, the blade set about two inches high. The grass on a newly established lawn should not be allowed to grow tall and coarse before cutting nor should it be clipped so short that there will be no leaf surface to manufacture food for the growth of roots.

If the weather becomes dry after the lawn has been sowed, the seeds may not germinate. This is particularly true if the ground has not been rolled after sowing the seed, so as to compact the soil and thus bring the moisture by capillarity up through the soil and into contact with the seeds. If, on the other hand, the ground has been rolled after sowing there will usually be sufficient moisture brought into contact with the seeds to insure germination. If in either case the soil is too dry for germination, it should be sprinkled, using a nozzle which will produce a fine spray. Too rapid addition of water causes puddling or, as it is commonly called, baking or hardening of the top layer of soil. This hard crust will keep much of the grass from coming up and will prevent the entrance and circulation of air among the roots, a factor which is very necessary in the growth of plants.

Young grass plants are tender and until they have developed a good root system are easily killed by drought. Therefore, the moisture content of the soil should be watched carefully until the lawn has become well established.

Weed Pests and Their Control

The beauty of a lawn depends primarily upon the uniformity of texture and color of the turf. Therefore, foreign plants which tend to break up this uniformity should be kept out of the lawn. It is no easy task to prevent the entrance of weeds and coarse grasses of various colors.

Much can be done to keep out undesirable plants when the lawn is first started. Here lies one of the reasons for preparing a good fertile seed bed and for the sowing of grass seed which is free from weed seeds. If a seed bed is prepared in the fall and the seed is not sowed until spring, many of the weed seeds which are in the soil will be given a chance to sprout and will be killed by cultivating the soil again in the spring before sowing the grass. On the other hand, the grass may have a better chance to establish a root system if it is sowed in the fall (late August or early September) and thereby may withstand the dry weather of the next summer which is almost sure to occur in Pennsylvania.

The fertility of the seed bed is another very important factor in keeping out the weeds. Weeds will grow whether the soil is fertile or not but the grass will grow so slowly on poor soil that the

weeds are given a great advantage. If the soil is rich the grass will grow rapidly and luxuriantly and will tend to smother out the weeds. After the grass has started well the lawn should be inspected often and any weeds and undesirable plants should be removed. If care is exercised this can be done with very little injury to the turf, and it may save a great deal of labor and trouble later. In well established lawns, patches of weeds and undesirable grass may often be eliminated by loosening up the soil with a rake or a sharp pointed hoe, and sowing thickly with a quick growing grass like redtop, after adding some quickly available fertilizer such as fine, well rotted manure or sodium nitrate.

The growth of weeds is often due to poor drainage, lack of moisture, acidity, or physical conditions of the soil. Many weeds will grow under any or all of these conditions but the good lawn grasses will not. Therefore, these conditions must be remedied before success will be obtained.

A few weeds can be eliminated by spraying with a solution of arsenite of soda, using eight pounds to fifty gallons of water. An example of such weeds is the common chickweed (*Stellaria media*) which sometimes gives trouble in early spring and in moist, shaded areas of the lawn. Dandelion, plantain and buckhorn may be destroyed by the use of gasoline injected into the centre or crown of the rosette of leaves with a sharp-pointed oil can or by touching them with a few drops of sulfuric acid.

Dandelion also may be eradicated from the lawn by proper spraying with iron sulfate. About five applications are required, the first in May just before the blooming period. One or two others should follow at intervals of three or four weeks, and one or two more in late fall. *The spraying should be discontinued through the hot dry weather of summer because of the danger of injury to the grass.* A noticeable blackening of the grass will follow each application but this will soon disappear if the grass is in a healthy, vigorous condition. A few other weeds are killed while others are only slightly injured. Unfortunately white clover is killed by the spraying. The spray solution is prepared by dissolving one and one-half pounds of the granular or "sugar" form of the iron sulfate in one gallon of water, which will be sufficient to cover about 375 square feet. Since it corrodes metals, the solution should be prepared in wooden or earthen vessels.

Crab grass (*Syntherisma sanguinalis*) is one of the most troublesome lawn pests, particularly in eastern Pennsylvania. It does not make its appearance until about July but it grows rapidly and spreads by taking roots at the joints of its creeping stems. By fall it has crowded out other grasses, taking on at this time a purplish or reddish color and completely dying with the approach of winter. The roots do not live over winter, and since the seeds are rather slow to germinate the next spring, the spots are left entirely bare.

Crab grass does not thrive in the shade and may be smothered quite easily by covering it with tar paper or boards. If it is not covered too long the other grasses may be only slightly injured while the crab grass is almost entirely killed and can be removed by raking with a sharp-toothed garden rake. Other quick growing seeds as redtop should be sowed at this time and be kept moist. Some quickly available fertilizer as fine well-rotted manure may be added. This

will quicken the new growth of grass which will soon cover the spots and help to crowd out the crab grass. The smothering method is unsightly and not always practical but at present no other method has been effective except that of hand weeding, which should commence as soon as the plants are large enough to pull.

Weeds which are matted together in patches, like ground ivy, thyme-leaved speedwell, heal-all and yarrow, are best removed by lifting the turf completely and reseeding the patches with a quick-growing grass, such as redtop.

Spring Renovation of Lawns

The severe winter weather with the alternate freezing and thawing makes it necessary to give the lawn some attention in the spring. This should be done early so as to give the grass a chance to form roots and become well established before the dry, hot weather of the summer begins. If the alternate freezing and thawing has raised some of the grass out of the ground as is usually the case, at least in spots, the lawn should be rolled early while the ground is moist and soft. This will make the lawn smooth and will replace in the soil the grass that has been uprooted. The spots in which the grass has been killed during the winter should be loosened up by raking and heavily reseeded. In fact, wherever the turf seems thin, seed should be sowed.

Terraces in particular are likely to be injured by the freezing and thawing during the winter. They too, should be rolled and reseeded. If too steep for the roller, they may be made firm by a stamper or implement made for the purpose. It is often difficult to cover the seed on the terraces. This may be accomplished by sprinkling some fine, rich soil over the seeds after they have been sowed. This will fill up the holes and cracks, will cover the seeds and will not interfere with the growth of the grass which is already established. In fact, it will stimulate its growth. The larger holes may often be patched with pieces of turf.

Fertilizing Important

The fertility of the lawn can not be maintained by tillage and crop rotation as can be done with gardens and agricultural lands. The only method of maintaining the fertility, therefore, is by surface applications of some kind of fertilizer.

No fertilizer is better than fine well-rotted stable manure which should be applied in the late fall. Any coarse material that remains may be raked off in the spring. Fresh manure should never be applied, unless it is positively known not to contain weed seeds.

Bone meal applied in the fall or early spring at the rate of 20 pounds to 1000 square feet of surface is one of the best fertilizers.

Many mixed fertilizers are extensively advertised under certain trade names. Some of these possess very little fertilizing value and are very expensive in proportion to the amount of plant food contained. If mixed fertilizers are desired, it is cheaper and more satisfactory to buy separate ingredients and combine them in suitable proportions. The following is a very good mixture:

Nitrate of Soda, ...	3.5 pounds
Phosphoric Acid	5.0 pounds
Muriate of Potash	1.5 pounds

The above mixture of 10 pounds is sufficient to cover an area of 500 square feet. It should be spread evenly and care must be used to avoid any scalding or burning of the grass.

Nitrate of soda dissolved in water and applied with a sprinkling can at the rate of about $\frac{1}{4}$ pound to 100 square feet of surface makes a good, quickly available, fertilizer. It may be applied in the undissolved salt condition, but as it is very caustic care must be taken to get it evenly distributed so that the grass will not be burned in spots.

Sheep manure makes a good top dressing, but the pulverized form is too expensive for the results obtained. It has some advantage over ordinary barnyard manure, since it is free from weed seeds and is in a condition which makes possible an easy and even application.

Lime keeps the soil sweet and is especially valuable in maintaining the proper condition for the growth of soil organisms, Kentucky blue grass, and white clover. It may be applied in the fall or early spring at the rate of about 25 pounds of slacked lime to 1000 square feet, which is approximately 1000 pounds per acre.

Mowing the Lawn

The clipping of grass is an essential factor in maintaining a beautiful lawn. The grass should not be allowed to grow so high as to become coarse and wiry, and, of course, must never be allowed to go to seed. On the other hand, it should not be clipped so short that there is no leaf surface left for the making of food for the nourishment of the roots. A safe rule is to aim to keep the grass clipped to the height of about two inches above the ground.

Watering

The watering of the lawn during the summer is another important factor. In dry weather when the grass becomes dried and parched, the lawn should be well watered to the depth of three or four inches at less frequent intervals instead of being given only a slight sprinkling every day. In the latter case, the grass will have a tendency to become very shallow rooted on account of only the top surface being kept moist, while in the former case the roots will grow deeper into the moist lower layers of soil.

Too frequently, the watering of lawns is begun before it is needed. The water which supplies the plant is brought up from the lower layers of soil by capillary attraction. The top layer may, therefore, become quite dry and still do little or no damage to the grass. Terraces will show signs of damage from drought more quickly than other parts of the lawn, on account of less absorption and more rapid evaporation of water. Terraces, therefore, should receive special attention during drought.

Constant care and attention is the price of maintaining a good lawn when once established.

References

Turf for Golf Courses, by Piper and Oakley, published by The MacMillan Company, New York, 1917.

Lawn Soils and Lawns—Farmers' Bulletin 494, U. S. Department of Agriculture, Washington, D. C., 1917.

Lawn Making, by Leonard Barron, published by Doubleday, Page and Company, 1923.

Lawns, Links and Sportsfields, by James MacDonald, published by Charles Scribner's Sons, New York, 1923.

